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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
DESTA, ELIAS	
ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/849,737	HUANG ET AL.	
	Examiner	Art Unit	
	Elias Desta	2857	

-- The MAILING DATE of this c mmunication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Applicant's Amendment

Claim Objection

1. The Examiner accepts the amendment to the objection of *claims 1 and 5*.

Rejection

2. *In reference to claims 13-16*: the amendment to claim 13 is considered and the rejection with respect to 35 U.S.C. 101 is withdrawn.

In reference to claims 1-8 and 13-16: the amendments to claims are considered and the rejection with respect to 35 U.S.C. 112 is withdrawn.

Explanation of Rejection

Claim rejection – 35 U.S.C. 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. *Claims 17 and 18* are rejected under 35 U.S.C. 101 because of the following reason:

- Claims 17 and 18 are presented as an abstract idea without reduction to a practical application. The content-based search is not specific to a particular art, and the outcome is not well defined to show that the subject matter is doing something. See In re *Warmerdam*, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). See also *Schrader*, 22 F.3d at 295, 30 USPQ2d at 1459.

Claim rejection – 35 U.S.C. 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) The invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. *Claims 1-26* are rejected under 35 U.S.C. 102(e) as anticipated by *Beigi et al.* (U.S. Patent 6,246,982).

In reference to claims 1, 5 and 9: *Beigi et al.* teaches a method of computing a distance measure between multiple mixtures type probability distribution functions (see *Beigi et al.*, Figs. 1-3 and Abstract). The method includes the steps of evaluating a joint distribution function (see *Beigi et al.*, Figs. 4A and 4B, and column 2, lines 32-37). As the sum value of μ_I and γ_k over the range of I=1 to N and k=1 to K equate to a value one is simply showing that the outcome of the sum of probability of events is always one.

With regard to claims 2, 6 and 10: as noted above in claims 1, 5 and 9, *Beigi et al.* further teaches that the first and second mixture probability density functions includes a Gaussian Mixture Model (see *Beigi et al.*, Figs. 4A and 4B).

With regard to claims 3, 7 and 11: as noted above in claims 1, 5 and 9, *Beigi et al.* further teaches that the element distance between the first and second probability distance functions includes Kullback Leibler Distance (see *Beigi et al.*, column 5, lines 21-34).

With regard to claims 4, 8 and 12: as noted above in claims 1, 5 and 9, *Beigi et al.* further shows that the first and second probability distribution functions are Gaussian mixture models derived from audio segments (see *Beigi et al.*, Fig. 1).

In reference to claim 13: as discussed in claim 1, *Beigi et al.* teaches a method for computing a distance between fist and second mixture type probability distribution functions (see *Beigi et al.*, column 5, line 48 to column 6, line 17). Similar to the claimed invention, *Beigi et al.* shows that W_I^A and W_M^A are the weighted factors in determining the overall distance. Further in Fig. 3, *Beigi et al.* shows that the inner collection distance is a weighted sum of distances between two or more Gaussian mixture probability distribution functions.

With regard to claim 14: as noted above in claim 13, *Beigi et al.* further teaches that the first and second mixture probability density functions include a Gaussian Mixture Model (see *Beigi et al.*, Figs. 4A and 4B).

With regard to claim 15: as noted above in claim 13, *Beigi et al.* further teaches that the element distance between the first and second probability distance functions includes Kullback Leibler Distance (see *Beigi et al.*, column 5, lines 21-34).

With regard to claim 16: as noted above in claim 13, *Beigi et al.* further shows that the first and second probability distribution functions are Gaussian mixture models derived from audio segments (see *Beigi et al.*, Fig. 1).

In reference to claims 17: *Beigi et al.* teaches a computer for content-based searching of stored data (see *Beigi et al.*, column 1, lines 5-11). The method includes the steps of:

- Identifying segments in the audio data (see *Beigi et al.*, column 1, line 12-16);
- Developing a probability distribution function for each of the audio segments from data points within each of the segments (see *Beigi et al.*, column 1, lines 53-63);
- Developing distance measure between a probability density function of a chosen data segment and probability distribution function for the audio sample segments (see *Beigi et al.*, column 1, lines 53-56);
- Applying a threshold to the developed distance measure to identify segments with distance measure relative to the chosen data segment (see *Beigi et al.*, column 7, lines 8-11) that is below a pre-selected threshold value where the distance is directly computed according to a measure that guarantees to satisfy the non-negative-ness (see *Beigi et al.*, column 5, equation 1, distance measure carried out in absolute value), symmetry (see *Beigi et al.*, column 5, equation 2 guarantees that a transpose metrics provide a symmetry property hence no transpose matrix can be carried out without the symmetrical property), and triangular inequality properties of a distance measure (see *Beigi et al.*, column 5, lines 9-11, Euclidian distance measurement guarantees triangular inequality).

With regard to claim 18: as noted above in claim 17, *Beigi et al.* further teaches that the chosen segment is a provided data segment (see *Beigi et al.*, column 1, lines 47-53).

With regard to claim 19: as noted above in claim 17, *Beigi et al.* further teaches that the stored data is audio data (see *Beigi et al.*, column 1, lines 47-63, applicant's invention provides audio signal processing within audio-video signal, no video signal or spectrum of colors are processed).

With regard to claim 20: as noted above in claim 17, *Beigi et al.* further teaches that the stored data includes segments that carry speeches of a speaker (see *Beigi et al.*, column 1, lines 5-11).

With regard to claim 21: as noted above in claim 20, *Beigi et al.* further teaches that the speaker characterizes the segment where the speaker influences (pre-dominates) an audio signal associated with the segment (see *Beigi et al.*, column 6, lines 43-48).

With regard to claim 22: as noted above in claim 20, *Beigi et al.* further teaches that the chosen segment carries a speech of a particular speaker (see *Beigi et al.*, column 6, lines 44-46)

With regard to claim 23: as noted above in claim 17, *Beigi et al.* teaches an audio signal processing; however, it does not say that the data is extracted from a television program. Nevertheless, the idea of the invention is claiming an audio signal-processing scheme and it is inherent to show that the speaker or the speech extracted for further test of collection or model can come from a television or video signal because a video or television signal consists of a separate audio signal track.

With regard to claim 24: as noted above in claim 17, *Beigi et al.* teaches a method of computing a distance measure between multiple mixtures type probability distribution functions (see *Beigi et al.*, Figs. 1-3 and Abstract). The method includes the steps of evaluating a joint distribution function (see *Beigi et al.*, Figs. 4A and 4B, and column 2, lines 32-37). As the sum

value of μ_I and γ_k over the range of I=1 to N and k=1 to K equate to a value one is simply showing that the outcome of the sum of probability of events is always one.

In reference to claim 25: as noted above in claim 24, *Beigi et al.* further teaches that the method executed in a computer includes the steps of:

- Identifying speaker segments in audio data based on speech contained in the data (see *Beigi et al.*, column 1, line 12-16);
- Developing a probability distribution function for each of the segments from data points within each of the segments (see *Beigi et al.*, column 1, lines 53-56); and
- Developing distance measures among the probability distribution functions, where each of the measures is obtained through one-pass evaluation of a function that guarantees the non-negative-ness (see *Beigi et al.*, column 5, equation 1, distance measure carried out in absolute value), symmetry (see *Beigi et al.*, column 5, equation 2 guarantees that a transpose metrics provide a symmetry property hence no transpose matrix can be carried out without the symmetrical property), and triangular inequality properties of a distance measure (see *Beigi et al.*, column 5, lines 9-11, Euclidian distance measurement guarantees triangular inequality).

With regard to claim 26: as noted above in claim 25, *Beigi et al.* further teaches a method of computing a distance measure between multiple mixtures type probability distribution functions (see *Beigi et al.*, Figs. 1-3 and Abstract). The method includes the steps of evaluating a joint distribution function (see *Beigi et al.*, Figs. 4A and 4B, and column 2, lines 32-37). As the

sum value of μ_I and γ_k over the range of I=1 to N and k=1 to K equate to a value one is simply showing that the outcome of the sum of probability of events is always one.

Response to Argument

7. As noted above, the Examiner still maintains the 35 U.S.C. 101 rejections as it applies to *claims 17 and 18*.

8. *In reference to claims 1-26:* Applicant has indicated that the distance measurement between the probability density functions is carried out using *Kullback Leibler Distance*. *Beigi et al.* in column 5, lines 20-34 shows that the distance between the probability density functions also can be computed using *Kullback Leibler Distance*. The measurement method includes inter-collection distance with a weighted sum of multiple distances (see *Beigi et al.*, column 5, lines 35-47); hence the measurement includes distances between each member and all of the other elements with an MN different distance measures.

Further, *Beigi et al.* in Figs. 4A and 4B, the distance measurement is carried out element by element; i.e., collection 'A' contains M n-dimensional distributions, A_1 through A_M and collection 'B' contains N n-dimensional distributions B_1 through B_M. An array of weighted row minimaW_1^A to W_M^A is computed by first calculating the distance from each A, n-dimensional distribution[s] to each B, n-dimensional distributions [s] to form a matrix distances from d_{11} to d_{MN}. Hence, as noted above, *Beigi et al.*, unlike applicant's assertion, each A_i or A_n contributes one distance measure to each MN element distance rather than N-element over all sum as stated by the applicant.

Conclusion

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elias Desta whose telephone number is (571)-272-2214. The examiner can normally be reached on M-Thu (8:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)-272-2216. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-5841 for regular communications and (703)-308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-1782.

Elias Desta
Examiner
Art Unit 2857

-ed

May 20, 2004

HAL WACHSMAN
PRIMARY EXAMINER